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In the claims:

1. (Once amended) An agricultural implement, which is arranged for introducing materials into the ground, wherein:

the implement includes a knife having an angled blade;

the implement includes a drawing means, for drawing the angled blade through the ground in a forwards direction;

the angled blade is effective, when drawn through the ground, to create an angled slit-opening in the ground;

the implement includes a conduit for conducting the materials to the angled blade;

the conduit is secured to the angled blade, and is so positioned thereon that, during operation, a discharge mouth of the conduit is located in the ground at a depth below the ground surface, and is so located in relation to the angled blade as to deposit the materials directly behind the angled blade, in the slit-opening created by the angled blade, as the knife is drawn through the ground;

the angled blade is formed with an over-surface and an under-surface, which intersect at a line, and the line defines a knife-edge of the blade;

the implement includes a knife-mounting means;

the knife-mounting means is effective to mount the angled blade at such an orientation and disposition in relation to the ground, during operation of the implement, that:

(a) when viewed from the forwards direction, the knife-edge makes an angle to the horizontal, termed the side-sloped angle, of between 30 and 60 degrees; and

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(b) the angled blade extends down into the ground to a blade-depth of no more than about 15 cm, measured vertically down from the ground surface:

wherein the blade is so mounted that, at a vertical cross-section of the blade, taken below the ground surface, substantially no point in or on the blade at that vertical cross-section is vertically lower in the ground than the knife-edge at that vertical cross-section.

2.(Original) As is claim 1, wherein the blade-depth is no more than about 10 cm.

3.(Original) As is claim 1, wherein the angled blade includes a below-ground portion, which lies wholly below ground, during operation, and the line defining the knife-edge is a straight line, when viewed in front elevation, over substantially the whole of the below-ground portion of the blade.

4.(Original) As in claim 1, wherein the angled blade includes a below-ground portion which lies wholly below ground during operation, and the line defining the knife-edge is a straight line, when viewed at right angles to the over-surface, over substantially the whole of the below-ground portion of the blade.

5.(Original) As in claim 1, wherein the side-sloping-angle is about 45 degrees.

6.(Original) As in claim 5 wherein the side-slope angle of the blade is constant over substantially the whole of the below-ground portion of the blade.

7.(Cancelled)

8.(Once Amended) As in claim 7 1, wherein the over-surface of the blade is so angled that, when the blade is drawn through the ground, ground-soil in the path of the over-surface is lifted upwards thereby.

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9.(Original) As in claim 1, wherein:

the over-surface of the blade includes an upper-edge surface, which is a portion of the over-surface that:

- a) is contiguous with the knife-edge;
- b) lies between the knife-edge and a line drawn on the over-surface parallel to the knife-edge and 4 cm back from the knife-edge; and
- c) lies between the bottom extremity of the knife-edge and the ground surface;

the upper-edge-surface is a unitary flat plane;

the knife-mounting means is effective to mount the angled blade at such an orientation and disposition of the knife in relation to the ground that a normal to the upper-edge-surface points upwards relative to the horizontal.

10.(Once Amended) As in claim 1, when viewed in cross-section of the blade taken in a plane at right angles to the knife-edge, the upper-edge-surface of the blade lies at an angle, termed the wedge-angle of the upper-edge surface of the blade, of between 14 and 45 degrees, ~~and preferably between 20 and 30 degrees to the horizontal.~~

11.(Original) As in claim 10, wherein the wedge-angle of the upper-edge surface of the blade is about 25 degrees.

12.(Original) As in claim 10, wherein the wedge-angle of the upper-edge-surface of the blade is substantially constant over a substantial area of the blade, being an area of the blade below the ground surface.

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13.(Original) As in claim 1, wherein, when viewed from the forwards direction, the over-surface of the blade occupies a height, above the knife-edge, of between 6 cm ad 10 cm, measured vertically.

14.(Original)As in claim 1, wherein when viewed from the forward direction, the over-surface of the blade occupies a height, above the knife-edge, of between 2.5 cm and 4.5 cm, measured at right angles to the knife-edge.

15.(Original) As in claim 1, wherein:

the under-surface of the blade includes a lower-edge surface, which is that portion of the under-surface that

- a) is contiguous with the knife-edge;
- b) lies between the knife-edge and a line drawn on the under-surface parallel to the knife-edge and 4 cm back from the knife-edge; and
- c) lies between the bottom extremity of the knife-edge and the ground surface; the knife-mounting means is effective to mount the angled blade at such an orientation and disposition of the knife in relation to the ground that normals drawn from substantially all points on the lower-edge-surface points downwards.

16.(Original) As in claim 15, wherein the under-surface is so disposed that, when the knife is viewed in side elevation, during operation, a normal to the under-surface is vertical or points slightly backwards from vertical.

17.(Original) As in claim 1, wherein the blade, as viewed in cross-section at the right angles of the knife-edge, is generally triangular in shape, the three sides of the

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triangle being the laid over-surface, the said under-surface, and a back-side of the blade.

18.(Once Amended) As in claim 17, wherein the distance between the over-surface and the under-surface at or adjacent to the back side of the blade is between 1.5 and 4.5, ~~and preferably between 2.5 and 4 cm.~~

19.(Original) As in claim 17, wherein the triangle is the same, as to size, shape, and orientation, at all below-ground cross-section at the right angles to the knife-edge.

20. (Original) As in claim 1, wherein, over at least the portion of the blade that lies below ground during operation, the conduit is structurally integrated into, or supported upon, a back-side of the blade.

21.(Original) As in claim 20, wherein the blade is so structured that substantially no part of the structure of the blade extends behind the conduit.

22.(Original) As in claim 20, wherein the over-surface and under-surface of the blade are flat planes extending from the knife-edge right back to the conduit.

23.(Original) As in claim 20, wherein the conduit has walls, and the conduit has a diametral dimension, inside the walls thereof, of between 10 mm and 25 mm.

24.(Original) As in claims 20, wherein the back-side of the blade, and the walls of the conduit, lie parallel to the knife-edge, when viewed in front elevation.

25.(Original) As in claim 20, wherein the back-side, and the walls of the conduit, lie parallel to the knife-edge, when viewed at right angles to the over-surface.

26.(Original) As in claim 20, wherein, in a cross-section of the blade taken in a plane at right angles to the knife-edge, the blade measures between 5 cm and 10 cm in width, from the knife-edge to a mid-point inside the conduit.

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27.(Original) As in claim 1, wherein the knife-mounting means is effective to mount the angled blade at such an orientation and disposition in relation to the ground, during operation of the implement, that:

when viewed in lateral or side elevation, during operation, the knife-edge makes an angle to the horizontal, termed the forward-pitch-angle, of between 30 and 60 degrees;

the blade slopes forward in that view, whereby deeper portions of the knife-edge in the ground lie ahead of more shallow portions of the knife-edge.

28. (Original) As in claim 27, wherein the forward-pitch-angle is 45 degrees.

29.(Original) As in claim 1, wherein the portion of the knife-edge below ground is smooth and uninterrupted, in the sense that there is substantially nothing on the knife-edge that would snag soil and debris passing upwards along the knife-edge, during operation.

30.(Original) As in claim 1, wherein:

the knife includes an in-ground blade portion, an above-ground shank portion, and an at-ground-surface transition portion;

the general shape and disposition of the knife is such that, during operation thereof, soil and debris traveling up the knife-edge towards, and out of, the ground surface is deflected aside from the shank portion.

31.(Original) As in claim 30, wherein:

the at-ground-surface transition portion of the knife is formed with a deflector-surface;

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the deflector-surface is so orientated upon the knife as to be visible from in front, in a horizontal front elevation, when the knife is operating in the ground;

when viewed in a lateral or side elevation of the knife during operation, a normal to the deflector-surface points backwards and downwards;

the above-ground shank portion includes a front surface and a rear surface, and left and right side surfaces, and the disposition of the knife is such that, during operation, soil debris traveling up the knife-edge towards the ground surface encounters the deflector-surface upon reaching the ground surface, and is deflected aside by same, and is thereby deflected clear of the front surface of the above-ground shank portion of the knife, and is deflected by same downwards and is thereby at least somewhat inhibited from flying into the air.

32. (Original) As in claim 31, wherein the knife-edge and the deflector-surface are contiguous, and the knife is so contiguous that the knife-edge blends smoothly into the deflector-surface without snags or interruptions.

33. (Original) As in claim 31, wherein:

the shank portion and the blade portion lie relatively at an angle, at or near the at-ground-surface transition portion, and the deflector-surface lies on the outside of the angle;

on the inside of the angle, the knife is smooth and has a configuration that resists snagging of soil debris.

34. (Original) As in claim 31, wherein the deflector-surface extends no more than about 2 cm below the ground surface.

35. (Original) As in claim 1, wherein:

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a frame of the implement includes a seeding-knife-mounting bar;

the knife is formed with an above-ground shank-portion, and the knife mounting means includes an operable attachment means whereby the knife can be detachably attached to the seeding-knife-mounting bar;

and the conduit is so positioned in relation to the shank-portion as to allow access for operation of the attachment means.

36. (Original) As in claim 35, wherein:

the shank portion includes a front surface and a rear surface, and left and right side surfaces;

in front view of the knife, the conduit lies in line with, and behind, the above-ground shank-portion;

and the conduit is spaced from the rear surface by a distance that is enough to permit access for operation of the attachment means.

37. (Original) As in claim 35, wherein:

the shank portion includes a front surface and a rear surface, and the left and right side surfaces;

and the conduit is located at one of the left and right side surfaces of the above-ground shank-portion.

38. (Original) As in claim 1, wherein the implement includes a seeding hose, of flexible material, and the conduit includes a port, for attachment thereto of the flexible seeding hose.

39. (Original) As in claim 1, wherein:

the knife includes a wing-extension;

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the wing-extension is formed with an over-surface and an under-surface, which intersect at a line, and the line defines a wing-knife-edge of the wing-extension;

the knife includes a wing-mounting-means, which is effective to so mount the wing-extension in relation to the angled blade that:

- (a) the knife-edge of the blade and the wing-knife-edge meet contiguously, at a point at the bottom of the knife-edge of the blade;
- (b) the wing-knife-edge extends substantially horizontally from the said point;
- (c) and the blade is so mounted that, at any vertical cross-section of the wing-extension, substantially no point in or on the wing-extension at that vertical cross-section is vertically lower in the ground than the wing-knife-edge at that vertical cross-section.

40.(Original) As in claim 39, wherein the overall vertical thickness of the wing extension is no more than 2 cm.

41. (Original) As in claim 39, wherein the wing-knife-edge forms a horizontal straight line, which in plan view lies at right angles to the forwards direction.

42. (Original) As in claim 1, wherein:

the angled blade includes a promontory, which is effective, when the blade is drawn through the ground, to cut a side ledge in the slit-opening;

the implement includes a second conduit for conducting a second material to the angled blade;

the second conduit is secured to the angled blade, and is so positioned thereon that, during operation, a discharge mouth of the second conduit is located in the ground at a depth below the ground surface, and is so located in the ground at a

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depth below the ground surface, and is so located in relation to the angled blade as to deposit the second material directly behind the promontory, and onto the side ledge, as the knife is drawn through the ground.

43. (Original) As in claim 42, wherein:

the slit opening as cut by the angled knife blade, and the disposition of the discharge mouth of the conduit, are such that the materials discharged from the conduit fall to the bottom of the slit opening;

the side ledge as cut by the promontory, and the disposition of the second conduit, are such that the second materials discharged from the second conduit fall onto the side ledge.

44.(Original) As in claim 43, wherein the materials are seeds, and the second material is fertilizer.

45.(Original) As in claim 1, wherein the materials are deposited on soil in the slit opening that has substantially not been compressed by the passage of the angled knife.

46.(Original) As in claim 44, wherein the second materials are deposited on soil in the side ledge that has substantially not been compressed by the passage of the promontory to the angled knife.

47.(Original) As in claim 1, wherein the implement includes a means for forcing air to flow through the conduit, whereby particulate materials in the conduit are urged along the conduit, and out of the discharge mouth, by the flow of air.

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48.(Original) As in claim 1, wherein the implement includes an implement-frame, from which the angled blade is suspended, and the drawing means includes a hitching means whereby the implement-frame is hitched to a tractor.

49.(Original) As in claim 1, wherein a large number of the said knives are mounted on the implement, each angled blade being so mounted as to be oriented and disposed each in the manner as defined in claim 1, the large number being eighteen or more.

50.(Original) As in claim 49, wherein, when viewed from the forwards direction, a substantial proportion of the large number of knives are angled to the left, and the remainder thereof are angled to the right.

51.(Original) As in claim 1, wherein the implement includes a hopper, for storage of the materials to be introduced into the ground, and the conduit is arranged to conduct the materials from the hopper to the angled blade.

52.(Original) As in claim 49, wherein the implement includes press-wheels, one for each angled knife, the press wheels being effective to roll over the soil lifted by the action of the angled knives.

53. (Withdrawn)

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83.(Withdrawn)

84.(Withdrawn)

85.(Original)An agricultural knife assembly, which is so structured as to be suitable for inserting granular materials into the ground, wherein:

the knife assembly is structurally suitable for the operations of creating a slit-opening in the ground and of inserting the materials into the slit-opening;

the knife assembly comprises a body-member and a replaceable tip-member;

the assembly comprises a knife having an angled blade assembly;

the body-member includes a body-over-surface and a body-under-surface, which intersects at a line, and the line defines a body-knife-edge;

the tip- member includes a tip-over-surface and a tip-under-surface, which intersects at a line, and the line defines a tip-knife-edge;

the shapes of the body-member and the tip-member, and the arrangement of the assembly, are such that:

- a) the body-knife-edge terminates at a lower extremity thereof, and the tip-knife-edge terminates at an upper extremity thereof;
- b) the lower extremity of the body-knife-edge is contiguous with, and co-linear with, the upper extremity of the tip-knife-edge;
- c) the tip-over-surface is a continuation of the plane of the body-over-surface, and the tip-under-surface is a continuation of the plane of the body-under-surface; the body-member, as viewed in cross-section at right angles to the body-knife-edge, is generally triangular in form, the three sides of the triangle being the said

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body-over-surface, the said body-under-surface, and a body-back-side of the body-member;

the tip-member, as viewed in cross-section at right angles to the tip-knife-edge, is generally triangular in form, the three sides of the triangle being the said tip-over-surface, the said tip-under-surface, and a tip-back-side of the tip-member;

a first one of the members includes a spline, and the other includes a complementary socket;

the spline and socket are so complementarily shaped that the tip-member can be engaged on, and disengaged from, the body-member, and, when the tip-member is fully engaged on the body-member, the tip-member is thereby held constrained against all modes of rotational movement of the tip-member relative to the body-member;

the assembly includes an operable release means;

the release means is effective to hold the tip-member fully engaged on the body-member, and, when operated, is effective to release the tip-member from the body-member.

86. (Original) As in claim 85, wherein:

the spline is a prism having the same general triangular shape as the first-member, but is of a smaller size;

the disposition of the spline in the first member is such that a spline-back-side of the triangular form of the spline lies in line with the back-side of the first member;

the socket in the second member is complementary to the triangular shape of the spline, and comprises an open-backed hollow chamber of the second member;

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the socket is positioned centrally within the back side of the second member, the structure of the second member being such that the socket is defined by, and lies between, upper and lower checks of the second member;

the disposition of the members is such that the upper and lower checks of the second member overlies the spline, respectively above and below, when the tip-member is fully engaged in the body-member.

87. (Original) As in claim 85, in association with an agricultural implement, wherein the implement includes a conduit for conducting seeds to the knife assembly;

the conduit is secured to the body-member, and is located at the body-back-side thereof;

the conduit continues down from the body-back-side, and extends down the spline-back-side;

a discharge mouth of the conduit is located at a lowermost extremity of the spline-back-side.

88. (Withdrawn)